

WHAT IS CLAIMED IS:

1. A ceramic circuit board comprising:

a ceramic substrate having a through hole;

a metal column arranged within the through hole, the metal column being made 0 to 150 μm shorter relative to a thickness of the ceramic substrate;

metal circuit plates attached to both surfaces of the ceramic substrate in such a way as to stop up the through hole; and

a brazing material interposed between the metal column and the metal circuit plate, for bonding together the metal column and the metal circuit plate.

2. A method for manufacturing a ceramic circuit board, comprising the steps of:

preparing a ceramic substrate having a through hole, a metal column with brazing material, and at least two pieces of metal circuit plates, said metal column with brazing material being made 40 to 140 μm longer relative to a thickness of the ceramic substrate, by coating both ends of a metal column which is 0 to 150 μm shorter relative to the thickness of the ceramic substrate, with a brazing material;

arranging the metal column with brazing material within the through hole of the ceramic substrate, and arranging the metal circuit plates on both surfaces of the ceramic substrate

in such a way as to stop up the through hole; and

bonding, after melting the brazing material by heating, the metal column and the metal circuit plates together via the molten brazing material.

3. The ceramic circuit board of claim 1,
wherein the metal circuit plate is made of copper or aluminum.
4. The ceramic circuit board of claim 1,
wherein the metal column is made of copper or aluminum.
5. The method for manufacturing the ceramic circuit board of claim 2,
wherein the metal circuit plate is made of copper or aluminum.
6. The method for manufacturing the ceramic circuit board of claim 2,
wherein the metal column is made of copper or aluminum.
7. The ceramic circuit board of claim 1,
wherein a space secured between an inner wall surface of the through hole and an outer wall surface of the metal column is kept in a range of 30 to 200 μm in length.

8. The method for manufacturing the ceramic circuit board of claim 2,

wherein a space secured between an inner wall surface of the through hole and an outer wall surface of the metal column is kept in a range of 30 to 200 μm in length.

9. A ceramic circuit board comprising:

a ceramic substrate having a through hole;

a metal column arranged within the through hole; and

metal circuit plates attached to both surfaces of the ceramic substrate in such a way as to stop up the through hole,

wherein the metal circuit plates attached to both surfaces of the ceramic substrate are connected to each other by the metal column,

and wherein, between an inner wall surface of the through hole and an outer wall surface of the metal column is secured a space which is 30 to 200 μm long.

10. The ceramic circuit board of claim 9,

wherein the metal circuit plate is made of copper or aluminum.

11. The ceramic circuit board of claim 9,

wherein the metal column is made of copper or aluminum.

12. The ceramic circuit board of claim 9,
wherein the metal circuit plate has its surface plated
with a layer made of nickel.
13. The ceramic circuit board of claim 12,
wherein the plate layer is made of a nickel-phosphorus
amorphous alloy containing phosphorus in an amount of 8 to 15
wt%.
14. The ceramic circuit board of claim 12,
wherein the plate layer is 1.5 to 3 μm thick.
15. The ceramic circuit board of claim 9,
wherein the metal column has a diameter of 200 μm or above.